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Initiative de recherche sur les compétences

Effects of Population Aging on Labour Market Flows in Canada: Analytical Issues and Research Priorities

Peter Kuhn (University of California, Santa Barbara)

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Abstract

Changes in the mix of goods consumed, and changes in the age mix of the labour force are the two main channels through which population aging is likely to affect labour market flows in Canada. In this paper it is argued that research should focus primarily on the second of these channels, because these effects are likely to be more direct and will occur earlier. Promising research directions in the area of labour force aging and worker flows include descriptive research on trends in labour market flows by age and education; research on the consequences of mobility (across jobs, employers, occupations, industries and regions) for older workers; understanding the effects of Canada's multifaceted income support and retraining system on older job movers, especially older job losers; studying the cost-effectiveness of retraining for older workers and the optimal targeting of such retraining; defining and identifying age discrimination in employment and the effects of public policy thereon; understanding the implications of downsizings and plant closures for older workers; and improving our understanding of the way a firm's age structure affects its behaviour and performance. In addition, research that helps assess the relative importance of some of the key processes generating labour market flows in the first place—for example, on-the-job search versus creative destruction processes—would improve our understanding of the effects of aging on labour flows.

Résumé

La variation de la composition des biens consommés et la variation de la composition par âge de la population active sont les deux principales voies par lesquelles le vieillissement de la population est susceptible d'influencer les mouvements sur le marché du travail au Canada. Dans cette étude, l'auteur soutient que les recherches devraient principalement porter sur la deuxième voie puisque les effets seront probablement plus directs et se produiront plus tôt. Parmi les orientations prometteuses de la recherche sur le vieillissement de la population active et les mouvements des travailleurs, notons la recherche descriptive concernant les tendances des mouvements sur le marché du travail selon l'âge et la scolarité; la recherche sur les conséquences de la mobilité (entre les emplois, les employeurs, les professions, les industries et les régions) pour les travailleurs âgés; l'étude des effets du système canadien à multiples facettes en matière de recyclage et de maintien du revenu sur les travailleurs âgés qui changent d'emploi, surtout ceux qui perdent leur emploi; l'étude coût-efficacité du recyclage des travailleurs âgés et du ciblage optimal de ce recyclage; le recensement et la définition de la discrimination fondée sur l'âge sur le marché du travail et les effets des politiques publiques sur celle-ci; l'étude des conséquences de la réduction des effectifs et de la fermeture d'usines pour les travailleurs âgés; l'étude plus approfondie de la façon dont la structure par âge d'une entreprise influe sur le comportement et le rendement de cette dernière. De plus, des recherches qui permettent d'évaluer l'importance relative de certains des processus clés qui entraînent des mouvements sur le marché du travail – par exemple la recherche en cours d'emploi plutôt que le processus de destruction créatrice – nous aideraient à mieux comprendre les effets du vieillissement sur les mouvements de la main-d'œuvre.

The Canadian economy has a highly dynamic labour force. As a part of normal turnover and of every worker's search for a better job, and in response to a wide array of shocks, including business cycles, changing international trade patterns, technological change, international financial crises, sectoral booms and busts such as those recently associated with the internet, terrorist attacks, wars, and outbreaks of disease, Canada's workers change jobs, employers, industries, occupations and acquire new skills at rates that are impressive by any international standard.

But Canada's population and workforce are growing older. Since older persons consume a different mix of goods and services, population aging constitutes yet another shock, in combination with all those mentioned above, that will give rise to labour reallocations in the coming decades. Further, in all industrialized societies for which we have data, older workers are, on average, less mobile, whether across jobs, firms, occupations or geographic locations.[1] Thus, population aging could affect Canada's ability to respond to the many shocks (including the "shock" of aging itself) that will inevitably affect its economy in the early 21st century. Will population aging constitute a major shock to the relative demand for goods and services in Canada, requiring significant and costly reallocations of labour? Will a greying labour force be less able to respond to *all* shocks affecting the Canadian economy? And if the answer to either of these questions is yes, what policy interventions (if any) should be considered? The goal of this paper is to sketch the outlines of a research agenda that can answer these broad questions.

Section 1 of this paper identifies and introduces two main aspects of population aging in Canada, and two main channels via which population aging might affect the size, direction and costs of labour market flows. Sections 2 and 3 describe the analytical issues involved in understanding each of these two channels of influence in turn, and discuss the likely relative importance of the two channels. Sections 4 and 5 suggest promising research questions and public policies relevant to both channels respectively, and Section 6 concludes.

1. Two Aspects of Aging, and Two Channels of Influence

There are two related but distinct ways in which the Canadian population is aging. The first involves growth in the ratio of the retired population to the working population. This is the well-known increase in the "dependency ratio", whose implications for the actuarial soundness of public retirement systems has been the subject of considerable attention and debate worldwide. The second aspect of aging is an increase in the median age of the working population. While both kinds of aging are occurring today, it is possible for these two aspects of aging to move in opposite directions. For example, when a large cohort of workers retires, the dependency ratio can rise at the same time that average age of the labour force is falling. And since –among other differences-- retired persons have little or no labour income while older workers tend to have high earnings,

[1] A partial exception to this pattern is Japan, where *involuntary* turnover (displacement) rises with age. See Abe et al., 2002.

the *effects* of these two kinds of aging are also likely to be distinct. Thus, it will be important to distinguish between them in all research on aging and the labour market.[2]

There are two conceptually distinct channels of influence via which population aging can affect the size, direction and cost of labour market flows in an economy. In the first of these, *product markets*, --i.e. society's pattern of demand for consumption goods and services-- are the prime movers. Simply put, this "**final demand**" channel results from the fact that older persons consume a different mix of goods and services than younger persons. Aside from obvious differences (old people are more likely to need nursing homes, and tend to consume more health care and prescription drugs), Börsch-Supan (2001) shows that older persons tend to consume more energy and housing, and less clothing, education, entertainment and travel. Clearly, these changes in consumption patterns may require some Canadian workers to change firms, sectors, regions, or occupations in order for these goods to be produced.

"Final demand" effects can be driven by both *aspects* of population aging identified above: a higher dependency ratio and an older working population. However, since discrete changes in consumption behavior occur at retirement (Lundberg et al. 2000), it seems likely that the former plays a larger role. One would therefore expect final demand effects to be most important in periods during the coming decades when the dependency ratio is rising the most, or –perhaps even more importantly—when the baby boom reaches ages when intensive nursing and health care is required.

In the other major channel of influence via which aging affects labor market flows, the *labour market* is the prime mover.[3] This **workforce aging** channel refers to two main facts. First, in an older labour force, it is likely that a greater share of turnover involves older workers. If turnover affects older workers differently –or if turnover of older workers affects the economy differently—this immediately implies a difference in how the labour market works. Second, it is well known that older Canadian workers are less likely to change jobs (either voluntarily or involuntarily—see Abe et al., Table 3.5) than younger workers, and that –at least when turnover is involuntary—older workers incur much larger wage losses when they do change jobs (Abe et al., Table 3.20). As a result, the simple fact that the working population is older is likely to reduce the amount of turnover, and increase its costs in the Canadian economy. Of course, this direct negative effect of workforce aging on turnover is not necessarily a bad thing: older workers, on average, are better-matched to their jobs and there is less (social *and* private) gain to such workers from continuing to look around for a better match. On the other

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[2] A classic illustration of the importance of this difference is the "double whammy" on the government's fiscal position when a large cohort such as the baby boom retires. At that time a large group of high-earning older workers begins to draw on the retirement system, while the workforce becomes younger, thereby reducing the average earnings on which social security taxes are paid.

[3] In an earlier draft of this paper I considered effects of aging that work through the tax and transfer system, for example an increase in payroll taxation required to keep the public retirement system solvent. While the effects of such tax changes on the relative well-being of different birth cohorts could be huge (see for example Börsch-Supan 2001), it is not clear that they have a large expected effect on labour market *flows* among firms, occupations and industries.

hand, the lower mobility of an older workforce may impede the economy's ability to adapt to exogenous shocks.

It may be worth mentioning, of course, that tomorrow's older workers will be, in some ways, different from today's –for example they will certainly be better educated, and the women among them will have had considerably more lifetime work experience. They may also have different attitudes towards learning new skills as a result of changing educational systems and their own work experience. Such changes may have effects on relative mobility of older and younger workers that warrant examination in future research.

Finally, note that unlike the final demand channel (which is driven by both aspects of population aging), the workforce aging aspect is driven *only* by the second aspect of population aging –an older workforce. Thus workforce aging effects will be of greatest importance at different times in the coming decades than final-demand effects. Because the effects of workforce aging will occur earlier, they are probably of more urgent concern today.

2. The Final Demand Channel: Analytical Issues and Likely Importance

Is an aging-induced change in the mix of goods and services consumed by Canadians likely to have large effects on the size, direction and costs of labour market flows in Canada? In order to assess the likely importance of such effects, what key analytical issues would need to be addressed? To answer these questions, we identify a simple shift-share approach as a reasonable starting point for an analysis, then address a considerable number of complicating issues in turn.

a. Shift-Share Analysis

A reasonable place to start in assessing the likely impact of aging-induced final demand changes on labour market flows is a simple shift-share analysis, such as that conducted by Axel Börsch-Supan (2001: pp. 25-27) for Germany. Börsch-Supan begins with an estimate of consumption patterns across nine broad industry groups by age at a point in time. Assuming these patterns will persist for almost a half century into the future, he then calculates the change in the mix of goods consumed that is likely to occur as a result of population aging. Finally, using employment shares across these industry groups, he calculates a crude estimate of the labour reallocation needed to produce this new mix of goods, concluding that "more than a sixth of all workers will need to change their jobs" (p. 26). While such an approach is a reasonable point of departure, in what follows I outline some important additional considerations that must be added to such an approach in order to estimate the size and costs of labour market flows likely to be induced by population aging.

b. Input-Output Considerations.

Not all the goods produced by any of the sectors in a typical shift-share analysis are consumed directly by consumers. For example, as well as being a final consumption good, transportation is an input into the production of other final consumption goods (groceries need to be transported to supermarkets); energy is both consumed directly and an input to final consumption of transportation. As a result, a simple shift-share analysis based only on changing final consumption patterns of the elderly could dramatically mis-state, say, the changes in employment in the energy sector required by an aging population. For example, while the old may consume more energy directly, they may consume less energy indirectly due to their lower consumption of transportation services and food. The net effect of aging on energy demand could therefore be nil, in contrast to what a simple shift-share analysis would indicate. Adjustment using standard input-output techniques is required.

c. The Level of Aggregation

Population aging will not only shift the mix of goods produced across broad sectors of the economy; it will cause shifts within broad sectors, between detailed industries, and within detailed industries between firms. Clearly, while higher levels of disaggregation are conceptually better, there are data limitations, and higher levels of disaggregation place more strain on the assumption that age-specific demand patterns will remain constant over several decades. Choosing the best level of aggregation with which to estimate these effects is an important issue that may be as much art as science.

d. Regional Effects

Closely related to the issue of the correct level of industrial detail is the correct level of regional detail. Clearly, to the extent that some important services –such as health care, housing, and nursing homes—must be produced locally, a shift in the geographical distribution of seniors will require labour reallocation even in the absence of consumptions shifts across industries. Will there be a pronounced shift in the geographical location of Canada's seniors? Evidence that seniors are increasingly attracted to local amenities and mild climates strongly suggests so. Both in areas losing a large share of their older populations, and in areas gaining a large share, aging-induced changes in demand patterns may be much more pronounced than the national average, with potentially important local effects. Implications of the fact that local aging-induced demand changes can be much more pronounced than national ones are explored more fully in our discussion of "bottlenecks" in Section 4 below.

e. Relative Price Effects.

The most common objection to both shift-share and input-output calculations is that they ignore price effects. If increased demand for services consumed by the elderly (e.g. nursing home services in Victoria, B.C.) bids up the prices of those services, the increase in consumption of those services will not be as great as a shift-share or input-output model predicts. This objection is very well known but this does not diminish its

potential importance; clearly it is another issue that would need to be addressed in assessing the importance of any final-demand effects of aging on labour market flows.

f. Overlapping Generations.

An obvious feature of the labour market is that each year new young people enter the labour force and older workers leave. Estimates of the effects of aging-induced sectoral shifts on labour flows need to take this into account. As an illustration, in a steady-state population where every worker has a 50-year work life, 2% of the labour force is replaced each year. Even if every worker holds the same job for his entire 50-year career[4], reallocating one sixth (18%) of the labour force (the fraction identified by Börsch-Supan as required over 40 years in Germany) into different jobs could take (depending on the initial distribution of older workers across jobs) as few as nine years, *with no worker ever having to change his/her job*. Since population aging effects take place over time horizons of several decades, overlapping-generations issues *must* be considered in the calculation of likely adjustment costs.

g. Gross Flows.

Both the Canadian and German economies experience gross flows of labour between firms, occupations and industries that dwarf the size of any net flows. For example, in 1995, about 16 *permanent* separations occurred for every 100 employed workers in Canada (Abe at al, Table 3.5).[5] In both Canada and the U.S., about one in ten jobs disappears each year, and one new job is created for every ten as well (Baldwin et al. 1998). These gross flows are generated by a long list of factors in addition to population aging, including optimal job-shopping and matching (Burdett 1978), business cycles, international trade shocks, government policy changes, new inventions, and changes in demand patterns caused by changing levels and distribution of real income. As a result, the net labour reallocation required by the distinct consumption patterns of the elderly can likely be achieved by a very small *redirection* of these huge gross flows without any change in their overall magnitude. The real question is: when a sector needs to contract due to a demand shock (such as aging but by no means restricted to aging), *which* changes in the gross flow pattern (of the essentially infinite number of possible ways to achieve the same net labour reallocation) tend to occur, and what are their costs? Despite the considerable progress made in the gross flows literature over the last decade, very little is yet known about this question. Hence I shall identify it as an important avenue for new research later in this paper.

h. International Trade.

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[4] An assumption which is blatantly false: Topel and Ward (1992) estimate that the average American man will hold 10 jobs in his lifetime, seven of them in his first 10 years in the labour market.

[5] Note that this is almost the number of job changes that Börsch-Supan estimates are needed to accommodate population aging over a period of *fourty* years. If we were to include temporary separations (where the employee returns to his previous employer at some time within a year), the annual rate of separations would more than double, to 36 percent. Of course, some of this high turnover could be attributable to repeat turnover by the same workers during the year.

In the standard small-open-economy trade model (e.g. Jones 1965), changes in domestic demand –whether caused by population aging or any other factor-- have *no* effect on the mix of goods actually produced in the economy, and hence cause no change whatsoever in the wages or employment patterns of domestic factors of production. This is because such economies (efficiently) produce a mix of goods of maximum total value on international markets (thus exploiting their comparative advantage), then satisfy domestic consumption needs by exporting or importing. This result is widely known as the separation theorem.

For example, suppose Canada exports electricity and buys everything else it needs on international markets. Will a change in tastes away from (imported) BMWs consumed by the young, towards (imported) prescription drugs consumed by the old, change the pattern of *production* in Canada? No. Canada's efficient production plan remains the same (to specialize in electricity) but it will purchase a different mix of imports (fewer BMWs and more prescription drugs) with its export earnings. Will a change in tastes from imported BMWs towards exported electricity (suppose the old want warmer houses) change the pattern of production in Canada? No. Canada simply exports less of its electricity and imports fewer BMWs, but continues *producing* the same amount of electricity. In both cases, Canadian workers' activities and wages will be determined by the international prices of the goods they produce, and these prices --because Canada is a small country— will be unaffected by changes in Canadian demand.

Of course, the standard small-open-economy trade model is an extreme case, but it dramatically illustrates the fact that the results of simple shift-share or input-output calculations can be drastically altered when international trade is considered. The effects of final demand will be further altered when a nontraded good is added into the small-open-economy model, especially if this nontradeable is disproportionately consumed by the old (for example nursing home care). To understand these effects, "partially-open" economy models such as those in Kuhn and Wooton (1991) are required.

i. International Factor Flows.

Of course, even if there are major *nontraded* goods that are consumed disproportionately by the elderly, it does not follow that any additional Canadian workers will need to work in those sectors when the population ages. This is because Canada's economy is also, to some extent, open to international factor flows. Anyone who has recently spent time in a Canadian nursing may have a similar impression to my own -- that immigrant labour seems to be highly overrepresented in that sector. Thus, in effect, rather than importing different goods to satisfy the changing consumption mix demanded by an older population, Canada can (and does) import the *workers* that produce those goods directly, with economic effects that are in many ways equivalent.[6] Any analysis of

[6] In the standard small-open-economy model, domestic factor prices are also completely unaffected by international factor flows. Thus the movement of immigrant labour into sectors that expand due to population aging could mitigate the need for native workers to move into those sectors and to retrain for those jobs. In the model it thereby also cancels out any demand-induced increase in the wages of workers employed in those sectors.

the effects of final demand changes on labour market flows in Canada must therefore consider both the pre-existing and induced immigration associated with these flows as well. And of course, it bears mentioning that (because immigrants tend to be young) immigration will have a direct effect on the average age of the Canadian population and labour force, though the size of that effect may not be large in magnitude unless immigration were to expand dramatically.[7]

j. The Pace of Change.

Population aging, even when massive in scope –and Canada's rate of aging is modest compared to most European countries and Japan-- , is a slow, predictable process, especially when compared to other shocks that cause worker flows and job displacement, such as business cycles, international trade shocks, wars and terrorism, disease outbreaks, and the spread of new technologies such as the internet. Since gradual changes in labour demand –even when large in magnitude-- can usually be handled by natural turnover rather than involuntary job displacement, population aging seems much less likely to give rise to painful adjustment costs than most other shocks to which the economy is subject.

One possible exception to the above discussion, however, refers to an aspect of labour "reallocation" that generally occurs much more slowly than interindustry or interoccupational shifts of existing workers: this is the adjustment of general education levels, an adjustment that, even today, is largely confined to changes in the education decisions of entering cohorts of workers. Since these changes occur very slowly, examination of the implications of population aging for the economy's relative demand for educated workers may deserve some attention. This is discussed in more detail in Section 4.

In sum, this discussion of the "final demand" channel suggests that, except for the possibility of some concentrated effects involving nontraded services in specific regions, and of some long-run shifts in the relative demand for educated workers, aging-induced final demand effects on labour market flows likely to be small in magnitude, far in the future, and low in cost. While –as already noted-- these two exceptions are explored further in Section 4 below, our main impression from this section is that serious and costly consequences of population aging for labour market flows, if they exist, probably derive from sources other than aging-induced changes in the mix of goods consumed.

3. The "Workforce Aging" Channel: Analytical Issues and Likely Importance

[7] It may be objected that Canada's "traditional" immigration source countries are aging also, and that in fact Canada is now competing with these countries for immigrants from the much younger populations in less-developed countries. That is certainly true, but given the vast reserves of young labour in the developing world, this seems unlikely to place a large constraint on Canada's ability to use immigrant labor, if it wishes, to produce needed nontraded services for its aging population.

Parallel to the last section, in this section I consider two main questions. First, is the aging of the workforce likely to have important effects on the size, nature, and costs of labour market flows in Canada? Second, what are the main analytical issues involved in estimating any such effects?

I begin by arguing that –in contrast to the final demand channel-- we can be fairly certain that workforce aging will have important effects on labour market flows. The reason is simply that the connection between workforce aging and labour market flows is much more direct, and in one aspect is so direct as to be almost tautological. This aspect refers to the following fact: as the Canadian workforce ages, it is fairly certain that a greater fraction of the labour market flows that occur will involve older workers. This applies to flows of all kinds: a greater share of quitters will be old; a greater share of displaced workers will be old, a greater share of workers who change industry or occupation, or who engage in educational upgrading will be old. If the experiences of older "flow-ers" are distinct, or the process of moving an older worker is for any reason more costly or interacts with public policies in distinct ways, workforce aging will have important effects on the size, nature and costs of labour market flows.

Is turnover of older workers likely to be "distinct"? Existing evidence shows very strong connections between a worker's age and his/her propensity to change employers, regions, or types of work. For example, it is well known that in any cross-section of North American workers, labour market flows are highly concentrated among young workers. For example, in 1995 the permanent separation rate for Canadian men aged 20-24 was 44 percent, compared to 9.5 percent among men aged 50-54 (Abe et al., Table 3.5); this pattern is true for both voluntary and involuntary job changes and is also observed when following an individual worker over time in panel data (e.g. Topel and Ward 1992). This raises the important possibility that an aging workforce may be less mobile, and thus less likely to "flow" in response to a variety of shocks which affect the economy. Also, it is well known that involuntary job turnover becomes much more *costly* with age; a regularity which appears to hold in all developed economies (Kuhn 2002, pp. 42-43). Factors causing this increase in costs include accumulation of firm-specific skills (Topel 1991), industry-specific skills (Neal 1995), occupation-specific skills (Shaw 1984 , Kamburov and Manovskii 2002a), decumulation of alternative skills (Kuhn and Sweetman 1999), time-horizon effects on the retraining decision (Bartel and Sicherman 1993) and perhaps an age-related increase in the psychic costs of acquiring new skills (Galenson 2003). All of these mechanisms are discussed in greater detail in Section 5. Importantly for our purposes here, they raise the related possibility that the (private and social) *costs* of industrial and other adjustments may be higher in an older than a younger workforce.

Aside from being less frequent and more costly, a third and final reason why turnover of older workers is distinct is its greater complexity. Consider for example a young displaced man: the overriding issue facing this person is simply how to find a new full-time job as good as the one that was lost. Now consider a displaced, 60-year-old man: for such a person a much wider range of options in addition to full-time re-employment are viable choices. These include partial retirement, full retirement, self

employment, and disability. Further, the worker's choice among these options is much more likely to be mediated by his/her health, and by factors such as the pace of technological change in his/her industry (Bartel and Sicherman 1993). Overall, the choice problem is more nuanced and complex. [8]

What are the key analytical issues involved in estimating the exact size and nature of the effects discussed above in Canada? As I believe there is room for considerable new and useful research in this area, I defer most of this discussion to Section 5, where these possibilities are described. In what follows I do, however, provide a brief discussion of key analytical issues in the analysis of workforce aging and a specific –but key—aspect of labour market flows: displacement. This summary is condensed from the methodological discussion in page 13-22 of Kuhn (2002). Most of these methodological watchwords apply equally to the study of separations for any reason other than displacement as well, and should be taken into account in the design of any study of workforce aging and labour market flows. My main reason for focusing on displacement is simply its strong, documented, negative effect on the workers it affects.

In any study of age and displacement (or, say, quits, or retirements), considerable care is needed in defining exactly who is a displaced worker (quitter, retiree). Since there is considerable discrepancy between the separation reasons reported by workers and firms for the same event (Abe et al. 2002), care needs to be taken in how these reports are used. Relatedly, which separations "count" as displacement—should expirations of fixed-term contracts be included? In retrospective surveys, there is considerable evidence of recall bias –only the most severe displacements tend to be remembered for a long time. Depending on the survey design, "early leavers" (those who adapt most successfully to, say, a plant closure) may not be included in the sample. Administrative data sets, which have some advantages in identifying displaced workers –they tend to contain early leavers—have other disadvantages. Chief among these are that separation reasons are often (though not always) unavailable, early leavers tend to be *over*-counted, "false firm deaths" can occur, and the analysis is often limited to plant closure victims only.

Second, crucial measurement issues can affect the results. Analysts need to maintain clear distinctions between establishments and firms, plant closures versus mass layoffs versus individual layoffs versus individual dismissals for cause, jobless durations versus unemployment durations, unconditional jobless/unemployment durations versus durations that condition on a positive spell occurring, and the effects of displacement on wages versus earnings.

Third, wage and earnings changes are observed only for workers who become re-employed during the sampling period, giving rise to a familiar kind of selection bias in earnings change regressions.

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[8] My focus on men in this paragraph's discussion is intentional, as similar issues also arise for women: among other things displacement could, for example, "result" in childbirth if mothers time births to occur when labour market opportunities are relatively unattractive.

Fourth, because wage growth is slower in plants that are about to shut down or downsize, some of the wage losses "caused" by such shutdowns take place *before* the shutdown. Identifying these raises the issue of the appropriate control group –many studies of displaced workers still use no control group at all--, and of the definition of the "counterfactual" that defines displacement in the first place (for example, do we want to compare displaced workers to those in the same plant who kept their jobs, or to workers in plants that did not experience a negative demand shock?). Further, measuring predisplacement wage losses raises the difficult issue of distinguishing these from hours reductions and temporary layoffs, which are also common in distressed plants before a mass layoff.

Fifth, and particularly relevant to older workers is the need to account for alternative *destinations* for displaced workers, including part-time work, self employment, retirement, other labour force withdrawal, and disability (see Abbring et al., 2002, who show this is particularly important for the Netherlands).

In sum, an aging workforce almost certainly implies that a greater share of the worker mobility in Canada will involve older workers. It is also clear that the *costs* of mobility are higher for older workers, and are especially high for older displaced workers, i.e. older workers who are forced to change jobs because their old jobs have been eliminated. Finally, it is clear that older displaced workers (and older "flow-ers" in general) face a distinct and more complex set of choices than younger flow-ers: a greater number of "destination states", including full and partial retirement, disability and self-employment are highly relevant to these workers. Thus it seems important and potentially fruitful to examine the expected rate and determinants of job separation, and the consequences of different types of job separation for older workers in Canada, as part of a research program on the labour market effects of population aging.

4. The "Final Demand" Channel: Promising Research Directions

As noted, population aging is only one of many shocks affecting the relative demand for different products in the Canadian economy. Further, unlike some other shocks –e.g. the invention of new products creating industries that did not exist before, the Asian financial crisis or the SARS epidemic—population aging has relatively gradual and predictable effects on the pattern of demand for goods and services. Thus it does not seem likely that aging-induced final demand shifts will cause costly labour reallocations in the Canadian economy.

That said, however, the discussion in Section 2 identified two possible exceptions to the above broad conclusion that may warrant further investigation. One of these is the possible effects of aging-induced final demand changes on the economy's demand for *educated workers*. Unlike the reallocation or retraining of an experienced labour force which can take place rather quickly, changes in the demand for formal pre-labour-market education take much longer to satisfy because it is almost exclusively though new cohorts that such changes occur. Since population aging *could* have large and predictable effects

on the demand for education, it seems reasonable for Canada's education system to anticipate these effects. For that reason, a key area for further research might be to estimate the skill mix of *nontraded* goods consumed by the elderly in Canada: is this biased towards high skill (physicians) or low skill (orderlies)? If it is not strongly biased in either direction, there is relatively little cause for policy concern in this particular area. If it is biased in favor of skilled workers, skill-based wage inequality in the Canadian labour market is likely to increase; if biased towards the less-skilled, it constitutes a force toward greater wage equality. The size of the effect can then be judged by a factor-content-of-production approach similar to that applied to the effects of trade on wage structure in Borjas, Freeman and Katz (1997). Again, the focus on nontraded goods in the above analysis is crucial, since –especially for a small open economy like Canada's-- it is usually socially optimal to accommodate changes in demand for *tradeable* goods via changes in trade patterns, *not* in the allocation of domestic production.[9]

Finally, it is important to mention a useful policy intervention related to this general theme. This is to provide forecasts of the types of occupational skills likely to be required in the future; forecasts which take into account the expected effects of population aging. My personal impression is that young people (such as high school students) take these forecasts seriously; thus these forecasts may well help young Canadians make the right kinds of occupational investments.

The second avenue worth exploring in this area concerns the identification of "bottlenecks" or "hot spots" in the Canadian economy where demand shifts due to aging *could* demand major, costly reallocations of labour. Clearly, changes in age structure can be much greater on the local than the national level, and the need for nontraded goods such as housing and medical care can only be satisfied locally. Further, labour market flows are costliest when they involve displacement of older workers, and it is well known that industries and occupations vary considerably in their current employment of older workers and in their effective retirement age. As a result, hot spots where aging-induced final demand changes could have important effects on labour market flows are likely to be geographically isolated areas experiencing dramatic changes in age structure which, in turn, require the sudden contraction of nontraded industries or occupations where older *workers* are highly over-represented, and where these older workers are still several years short of their typical or expected retirement age. Concerning policy interventions that might be relevant to local bottlenecks, the reduction of occupational and other mobility barriers across provinces and regions seems well worth considering.

Finally, having defined the notion of "bottlenecks" where sudden contraction of "old" industries has the potential to cause significant labour market pain, it seems natural to ask: why restrict attention to bottlenecks created by aging-induced changes in final demand? Since so many shocks affect the Canadian economy and give rise to displacement, why should one particular source of shocks warrant special attention? To shed some light on this question, it is interesting to note that a similar debate has arisen in

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[9] Note that the outcome discussed in this paragraph is *wages*. Strictly speaking this is outside the frame of reference for this paper which focuses on labour market flows. However this seemed important enough to mention; we return to wage inequality as a possible outcome once more in this paper: see note 15.

the U.S. concerning a different class of shocks: those that are traceable to international trade. In the U.S., a series of programs, including Trade Adjustment Assistance, have been targeted specifically at workers displaced for this reason. Unsurprisingly, this has created problems because in practice it is very difficult to identify whether a particular worker's displacement (or even a particular industry's decline) was in fact caused by international trade. Further, *a priori*, there is no reason to expect the consequences of displacement to be any more or less severe for workers displaced for this particular reason. Interestingly, however, there may be an important *political economy* rationale for trade-related assistance to displaced workers --it can be the political quid-pro-quo that helps get a welfare-improving free trade deal approved in Congress/Parliament. Of course, there is no such argument for the case of age: we will continue getting older, whether or not we provide special assistance to workers displaced due to population aging.

In sum, it seems more relevant to the long-term well-being of Canadians to look at the way in which population aging will affect our economy's ability to respond to *all* shocks, not just those shocks caused by population aging itself. As we shall see in the next section there is much to be concerned about, and interested in, in that area.

5. The "Workforce Aging" Channel: Promising Research Directions

To quantify the effects of an aging workforce on the size and costs of labour market flows, and to evaluate a number of possible policy responses, several broad areas of research should be explored. In what follows I describe promising avenues in each of these areas in turn, beginning with basic trends and facts. In some of these cases, important research already exists; I do not claim to have made an exhaustive survey of all relevant research in each case. That will be the responsibility of authors submitting specific research proposals to the SSHRC process that will follow this roundtable. In other cases, important questions are identified, though it is not clear in every case that Canadian data even exists with which to answer those questions. Since this paper is written early in the development of a national research agenda on aging and labour markets, one very desirable outcome from the paper might be the development of new data sources that are especially relevant to the most pressing research issues identified here.

a. Trends in Labour Market Flows by Age

As a starting point for an analysis of the effects of an aging labour force on labour market flows, an understanding of the basic stylized facts as they pertain to Canada is essential. In particular, what is happening to overall turnover and displacement rates in Canada? Some work on time trends in separations by type has been done by Picot et al. (1997). Work on on-the job search by Skuterud (2002) shows that all Canadian workers –including high-tenure, older workers—are engaged in much more on-the-job search today than two decades ago. Thus there is some evidence that older workers are

becoming *more* interested in changing jobs than they were in the past. Interestingly, recent US data (Farber 2003) on time trends in displacement shows no clear trend in the displacement of older workers since 1981. To address issues of aging and flows in Canada, much of the above work needs (a) to be done using Canadian data, (b) to be updated to 2003, and (c) to be disaggregated by workers' age and education levels.

It would also be interesting, if possible, to learn about trends and patterns in *perceived* job security by age, paralleling the analysis in Schmidt (2000) using the U.S. General Social Survey. Clearly, even if actual changes are hard to detect, *perceived* changes could be affecting the human capital investment and job search decisions of older Canadian workers in important ways. For example, if older workers' jobs are expected to be less secure, we should expect those workers to invest less in firm-specific skills, more in general skills, and to work harder to maintain their alternative skills (Kuhn and Sweetman 2003).

Descriptive research on worker flows should also be combined with research on *job flows*, including job creation, destruction and reallocation. Some important work in this area has already been done—see for example Baldwin, Dunne and Haltiwanger (1998) which is especially valuable because it puts Canada in a comparative context. But to link the the job creation/destruction research to an aging workforce, it would be especially valuable to link information on job flows –in particular, plant closures and other forms of job destruction—to worker characteristics, the most important of which in the current context are, of course, age, and reason for separation, including layoffs. When an industry or firm goes into decline, how do gross flow patterns differ, depending on the initial age mix of the workforce? Very little is known about this.

Finally, although prediction is (wisely) not a strong suit of most social scientists, it may be interesting to speculate on future trends in displacement rates and consequences. For example, if displacement is primarily the result of technological shocks, is it likely that these will increase in frequency as technological progress accelerates? This would make the issue of labour force adaptability even more critical in the future. Given that, it seems reasonable to ask whether education will help as a policy tool: are the more educated elders of the future more likely to choose retraining over retirement, and will they adapt more successfully to displacement than their predecessors? Understanding the relation between education and displacement among today's older workers may certainly help answer these questions.

b. Consequences of Mobility for Older Workers

As already noted, while it is important to know whether older workers are at increased risk of either voluntary turnover or displacement in Canada today, one thing is quite sure *regardless* of the answer to that question: as Canada's workforce ages, a larger share of the country's job separations will involve older workers.[10] A second thing that

[10] The only way this would not be the case is if displacement rates among the older workers *fell* as the workforce aged; this theoretical possibility is addressed below but seems unlikely.

seems beyond dispute is that separations in general, and displacements in particular, affect older workers in a different and more complex way. Unlike younger workers, where the main issue is how long it takes to become re-employed, older workers' choices are more likely to involve multiple possible destinations: retirement, disability, retraining, self-employment, part time work and the potential for induced spousal retirement as well. Also, much more than for younger workers, the effects of displacement are much more mediated by health, which may itself be affected by displacement. (e.g. Gallo et al. 2000). Because older workers have a shorter time horizon over which to capitalize the returns to retraining, older workers' retraining decisions are also much more affected by the pace of technical change in one's industry (Bartel and Sicherman 1993). The analysis of these alternative destinations, and of the specific consequences of turnover and displacement for older workers, is just beginning worldwide, and almost nonexistent in Canada. Aside from Bartel and Sicherman, the only papers of which I am aware are Farber (1999), Elder (2000) and Chan and Stevens (2001).

In addition to the "destination" to which older displaced workers move, important considerations include the length of time until rehire or another transition occurs: do older workers in Canada still take much longer to find new jobs?[11] Is this due to a lack of jobs (i.e.a slower offer arrival rate), or higher reservation wages (older workers, on average, have more wealth and can therefore be choosier about which new jobs to accept)? What factors speed re-employment of older job losers; for example does education reduce spells as much for older workers as for younger ones? What kinds of firms (small, large, union, nonunion) hire older displaced workers and which industries and occupations are most likely to hire such workers? How are newly-hired older workers paid relative to newly-hired young workers with comparable skills in the same firm (Kotlikoff and Gokhale 1992)? And do older displaced workers go through the same process of "stepping stone jobs", gradually working their way into better jobs, as younger displaced workers? Are older workers more likely to go into self-employment when they lose a job? How do they fare if they do so? Are older displaced workers more or less likely to change industries, occupations or regions when displaced? Finally, all the above questions can of course be asked of separations for reasons other than displacements, such as quits or retirements. Our main focus on displacements is simply because these are likely to impose the greatest hardships on individual workers.

Other questions relevant to the consequences of turnover for older Canadian workers include the following: How industry-specific is human capital in Canada, compared to the U.S.(Neal 1995)? How occupation-specific is human capital in Canada, compared to the U.S. (Shaw 1984; Kamburov and Manovskii 2002a)? Is occupational and industry mobility rising, as Kamburov and Manovskii (2002b) find for the U.S.? Is it rising even among older cohorts of workers?

c. Public Policy and Older Job Losers

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[11] Clearly, the choice of destination and time to arrival can be modelled jointly in a competing-hazard framework.

Given an aging workforce, it seems reasonable to take stock of Canada's income support system in light of how it serves this population. In particular, how do older job losers fit into this system, and is the system likely to serve this group well at a reasonable cost to taxpayers and the rest of society? Rather than delve into details of specific programs here, I simply highlight some key questions in this area, and conclude with two main principles that should guide both research and policy here.

Clearly, one key question regarding older job losers is whether these workers will move into full or partial retirement. Is this encouraged or penalized by Canada's Employment Insurance program, its disability-insurance programs, and its retirement programs (CPP-OAS-GIS)? If one spouse wishes to partially retire as a consequence of displacement, what are the income-support consequences for the other spouse? Will Canadian couples pay a high price to engage in complementary leisure (Hamermesh 2000) if one is displaced late in life? Another question concerns transitions into retraining and self employment: do the existing provisions of the EI system for retraining and for assisting transitions into self-employment accommodate the needs of older displaced workers well? Do they sometimes encourage older workers to retrain when the socially optimal outcome might be retirement? Should these programs take into account the fact that, while older workers suffer the most from job losses, they also tend to have more assets (including pension assets) with which to finance retraining (or consumption during unemployment and retirement).

Next, suppose an older displaced worker enters Canada's income support system. Is there a useful way to *profile* such workers based on their characteristics and past work experience in order to optimally direct them into retraining activities of different types, self employment, health care/disability assistance, or early retirement? Relatedly, can (and should) one "profile" industries or regions where assistance to older job losers would be targetted. (Japan, for example, has an interesting program which subsidizes the re-employment –in other industries—of workers displaced from certain targeted industries.)[12] Finally, what assistance do Canadian *employers* provide to older displaced workers, and how does this interact with public policies? To my knowledge there is only one study of this whole issue (Riddell, 1999), and it is not focused specifically on older workers. Are there specific items –other than longer advance notice and greater severance—that might be of help to older job losers?

In addition to the above examples, I am sure that other important questions regarding the interaction of older job losers with Canada's highly complex income support system can and will be asked. Rather than attempting to detail all of these, I will argue instead that two underlying principles should guide both research and policy in this area. The first of these is *identifying and supporting efficient transitions*. Clearly, the objective of public policy should *not* be to get every displaced older worker back into full-time work: for some workers the socially most efficient transition might be partial or complete retirement; for others it may be self-employment. Sensible public policy should

[12] See Abe et al (2002), pp. 212-214.

attempt to identify the most efficient transition for such workers and *support* it, not counteract it. The second principle is *accounting for policy interactions*. The oft-repeated but seldom-heeded dictum that a wide variety of income support programs, including EI, worker's compensation, CPP/OAS/GIS, etc *all* matter, is especially important for older job losers, who find themselves at the boundary between the retirement system and the EI/income support/retraining system aimed at Canada's employed.

d. Age and Retraining

When, and for what kinds of skills, is it optimal for older workers to retrain? In analysing the life-cycle pattern of human capital accumulation and decumulation, economists have tended to emphasize "horizon effects" – workers near the end of their careers have diminished incentives to invest, leading to a hump-shaped lifetime productivity profile. Psychologists, on the other hand, attribute the hump-shaped life cycle productivity pattern to "life-cycle variations in the ability to assimilate and produce new ideas. According to this view, at first exposure to a field, individuals' thought patterns are highly flexible, but as exposure (measured by experience in an area) accumulates, existing thought patterns become reinforced making it increasingly difficult to think in different ways" (Galenson 2003). In addition, psychologists have found that age-productivity patterns vary across professions, with some peaking at radically different ages than others (e.g. Lehman 1953; Simonton 1988); recent studies by economists have shown that the lifetime productivity profile within a profession can change dramatically across cohorts (Galenson and Weinberg 2000). Studies of these issues can indicate whether it pays a given older worker to retrain, and what kind of work is most suitable.

Thus, the effects of workforce aging on retraining and retrainability may be a promising avenue for future interdisciplinary research, combining the expertise of psychologists who specialize in learning (and in gerontology) with that of economists. Another issue affecting retraining of older workers is the role of liquidity constraints (Chapman et al., 2002), though it may be the case that older workers are less likely to face such constraints than the young.

e. Defining and Identifying Age Discrimination

One issue that often surfaces when older workers are forced to change their jobs is the notion of age discrimination. What exactly is age discrimination? Because the issue has often arisen in the context of the mandatory retirement debate, where age discrimination is often confused with the ability to voluntarily enter an employment contract that specifies a mandatory retirement age (Gunderson and Pesando 1988), many economists tend to be skeptical about this notion.

But this does not imply that age discrimination cannot be rigorously and sensibly defined, nor that it does not exist. For example, one possible definition of age

discrimination is the use of age as a summary statistic for individual productivity when better measures are available. In the U.S., for example, workers can sue their former employer if they can demonstrate that a downsizing or buyout specifically targeted a group of workers because of their age rather than the individual's own job performance.[13]

A second, and equally important notion of age discrimination views it as a violation, by the firm, of an implicit contract with long-term employees. Such implicit contracts (often not so implicit and stated, for example, in company personnel handbooks) may prescribe a certain level of pension benefit, certain procedures for permanent layoffs (for example by inverse seniority), that opportunistic firms sometimes find it in their interest to violate. This is particularly likely when the implicit contract promises workers a considerable degree of deferred compensation (Lazear 1979), and when changes in firm ownership lessen the reputational considerations to the firm from violating such agreements (see for example Shleifer and Summers 1988; Bertrand 1999).

The above discussion raises the issue of the relationship between older displaced workers and the private pension and severance system. Are existing provisions sufficient to keep employers honest? For example, in the U.S., employers can make dramatic, unilateral changes to pension schemes, such as converting to "cash-balance" plans, late in workers' lives, including shortly before displacement. Is this true in Canada? If so, firms laying off or forcing out older workers could be violating implicit contracts. Helping workers enforce these contracts could be in society's interest. To date, our theoretical understanding of private severance pay arrangements –when are these likely to arise in employment contracts? Are private arrangements likely to be efficient?—remains very weak. Some preliminary insights are available in Lazear (1990) for the case of severance pay, and in Kuhn (1992) and Addison and Chilton (1997) for the case of advance notice of job loss. Advancing this literature, and extending it to encompass the economics of buyouts and of downsizing, could add considerably to our understanding of the situation facing older displaced workers in Canada. The discussion of downsizing also brings us to our next major area:

f. Understanding the Downsizing/Shutdown Process and its Implications for Older Workers: Who Remains on a Sinking Ship?

One outstanding and poorly-understood question in the displaced-worker literature, and a question that is particularly relevant to older workers in dying plants, is the series of events that takes place in the months and years leading up to a mass layoff or plant closure. Understanding this process is vital to accurately measuring the social cost of displacement: for example, if the workers with the best outside options leave early

[13] Specifically, the Older Workers Benefit Protection Act of 1990, or OWBPA, is aimed at workers 40 and over. It requires firms to provide employees with age-specific data about who is targeted and who remains on the job after layoffs or early retirement buyouts. The law is intended to give workers the information they need to decide whether to sign agreements not to sue the company for a higher severance package, or if they have grounds for a lawsuit. In the U.S. about half of all age discrimination cases are brought by workers who have been fired or laid off.

then "traditional" measures of displacement-induced wage losses are overestimates; if there are significant wage cuts before the closure then "traditional" measures are underestimates. Understanding the process is also vital to designing policies targeted at older displaced workers: for example, if most workers are displaced from the firm in small groups before the "main" mass layoff, then only the minority of workers who stay till the "bitter end" benefit from "group" advance notice laws.

A small amount of work on this topic exists, including a recent paper by Hamermesh and Pfann (2001) focusing on a single Dutch firm, and work in progress by Bowlus and Vilhuber (2001). Some important puzzles remain, including the question of why wages do not fall more than do: workers who stay till the end clearly experience large wage drops, indicating that dying firms continue to pay their workers considerably more than those workers can earn elsewhere. Why? Some interesting suggestions are provided by Lawrence and Lawrence (1985) and Sargent (1995), but more ideas and evidence are needed.

Closely related to the question of who remains in dying firms is the question of which plants and workers remain in declining industries. Here, the consequences of industry decline for stayers' wages have been measured in one U.S. paper, (Devereux, 2002), but nothing is known in Canada, even though panel data sets with which to answer such questions now exist.

A novel way to learn more about the process of firm- and industry decline and its effects on older, incumbent workers would be to match data on job flows taken from sources like the Census of Manufactures with information on worker characteristics (especially age) taken from other sources. If not practical on a large scale, detailed industry case studies, such as those conducted in Foster et al. (2003) on a different issue, could be informative. And of course, matched employer-employee databases, such as Statistics Canada's new WES (once it has a panel aspect) or matched databases derived from administrative data, are an ideal place to conduct analyses of this kind. Indeed, the *most critical data gap* relevant to all the research proposed in this paper involves data of this kind: *panel data on firms or establishments that contains basic demographic information (such as age) on the workers who enter and leave them.* This is highly relevant to the following research area (g) below as well.

In general, studies of the downsizing process, and the process of industry decline, whether conducted on nationally-representative data, or case studies, can add considerably to our understanding of the consequences of industrial adjustment for older workers.

g. The Age Structure of Firms and Firm Behavior

In recent years, researchers in industrial organization have begun to explore the implications of a *firm's* age for its behavior, by modelling life cycles of firms and industries (e.g. MacDonald and Jovanovic 1994). One thing that neither they, nor labour economists have done, however, is to explore the implications of the *age structure of a*

firm's workforce for its behavior. Although the problem is closely related to one that has been studied --the economics of investment when capital comes in different "vintages"— it is distinct because workers, unlike machines, can accumulate firm-specific skills. Although the dynamic labour demand literature (as summarized for example in Hamermesh 1993) is by now considerable, to my knowledge this problem has not been addressed.

Why is this problem is relevant to turnover of older workers in Canada? Clearly, an older workforce makes it likely that retirements will rise relative to total employment. We have very little understanding of the adjustment costs retirement imposes on firms, the adjustment process within firms following a wave of retirements (including for example, costs due to loss of collective knowledge), and the relation of both these processes to the age mix of the firm's remaining workers. Clearly, both theoretical and empirical work on the age structure of a *firm's labour force* in a dynamic labour demand context will be useful.

A related class of models deserves some mention here. In principle, models like Demougin and Siow (1994), where senior workers teach juniors, provide a framework in which one could examine the impacts of workforce aging on the internal structure of firms (does a surplus of older workers reduce the average "span of control" by raising the number of "bosses"; does it reduce firms' recruitment of senior management from outside the firm; does a large batch of retirements hamper the training process within the firm?). Also, in these kinds of models, what are the implications of workforce aging for growth? To my knowledge, no one has introduced a non-steady-state age distribution (as would be implied by the exit of a "baby boom" generation from the labour force) into models of this kind.

h. Theoretical Perspectives

Up to now, I have argued that (a) an aging workforce implies that the average age of workers who change jobs will rise, and that (b) because older workers turn over less, an older workforce implies that the aggregate turnover rate is likely to fall. While some combination of these two effects is, in my judgement, very likely to occur, in fact, neither of these outcomes *must* occur. Which one does, or which one predominates, depends on the model that best describes labour reallocation in the Canadian economy.[14]

One simple model (or class of models) of turnover is the search framework originating in Burdett (1978). Here, turnover is driven by each worker's search for a better job over his or her lifetime. In the simplest version of this model there are no shocks to productivity; each worker simply climbs a job "ladder" at different speeds depending on his/her luck in obtaining wage offers. Turnover declines with a worker's

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[14] A similar question arises regarding education: since educated workers turn over less, it is tempting to argue that an increase in educational qualifications (say, among older workers) will reduce aggregate turnover. Will it? It depends on the model.

age because it is harder to find a better job when one is already most of the way up the wage "ladder". In this class of models, workforce aging implies (b) above, but not (a). A representative worker's lifetime wage and turnover profile is unaffected by the age distribution of workers.

Now consider a second, highly stylized model in the spirit of Aghion and Howitt's (1992) creative destruction paradigm. Here, a fixed fraction of jobs are destroyed every year and replaced by other jobs, requiring a set fraction (say a) of workers to change jobs each year. Assume that it is always the youngest a workers who make these job changes. In this economy, workforce aging implies (a) above, but not (b). Achieving the same amount of labour reallocation in an older workforce means that the average age of those forced to change jobs will rise. But workforce aging causes no change whatever in the total amount of reallocation that goes on.

At the moment, essentially nothing is known about whether the former (search) or latter (creative destruction) model best describes the Canadian (or any other) economy. For that reason, further theoretical *and* empirical work to help distinguish these broad classes of models would seem to be useful. A nice recent example is Faberman (2003), who presents evidence favoring the creative destruction model for the U.S.

Another possible empirical approach to this question relates specifically to the effects of workforce aging on turnover. This would involve adapting the techniques used in the well-known literature on cohort size and wage structure (e.g. Welch 1979; Dooley and Gottschalk 1984) to the case of cohort size and *turnover*. For example, when the baby boom *entered* the labour market, did the aggregate turnover rate rise? If so, this is evidence in favor of a "search" model. Did turnover among older workers fall? If so, this is evidence in favor of a "creative destruction" model in which the younger workers bear the adjustment burden. More generally, what happens to the pattern of turnover across age groups when a (national or regional) economy's relative supplies of older and younger workers changes? These are questions that can be fruitfully asked using existing data, drawing both on the period when the baby boom entered the labour market, and when it leaves, as well as on inter-regional variation in relative supplies of labour.[15]

A final role for theory in this entire enterprise would be to help distinguish private and social costs. So far, my discussion has focused largely on costs to individual workers, and has treated private and social costs synonymously. Especially in models of search and turnover, however, there are many cases where these costs diverge. See for example Hall and Lazear 1984, and Mortensen 1986, for why turnover and search can be either too high or too low.

6. Summary

[15] Of course, it is also natural to ask whether labour force aging has reduced the relative *wage* of older workers, using frameworks such as Katz and Murphy's (1991). This however brings us beyond the scope of the current paper, since wages, not worker flows, are the outcome of interest in this case.

Population aging could affect labour market flows in Canada through two main channels—the product market and the labour market. In this paper I argue that, while interesting issues arise within both these channels, the second of these is of greater concern for policy, and offers greater promise for useful research. This is because (a) population aging is only one of many product market shocks that affect labour market flows; (b) compared to other product market shocks, the effects of aging are gradual, predictable, and likely to be concentrated in the more-distant future; and (c) the product-market channel constitutes a less direct connection from aging to labour market flows than does the phenomenon of labour force aging itself.

Because older workers are less mobile –whether across jobs, firms, occupations, industries or regions--, and because older workers incur much greater costs when they do move across these boundaries, the aging of Canada's workforce does raise serious concerns about the economy's future ability to absorb a large variety of demand shocks, most of which –as noted-- are much more sudden and wrenching than the demand shock related to population aging. And while all labour market flows have some cost, the literature on involuntary displacements and plant closures clearly shows that these particular flows have the most dramatic and concentrated deleterious effects on individual workers. Thus, while all flows deserve analysis, studies of the effect of population aging on labour market flows should pay particular attention to displaced workers.

While it is not clear that displacement rates are increasing among older workers in Canada –this is one of many research topics suggested in this paper-- one virtually certain consequence of labour force aging is that there will be a larger number of older displaced workers in Canada over the coming decade and beyond. Older displaced workers, both in Canada and elsewhere, face special circumstances that significantly complicate their choices and outcomes compared to younger people who lose jobs. A key source of this complexity is the multiplicity of "destinations" among which older displaced workers choose: while the overriding concern of young displaced workers is how to get another full-time job, older workers are more likely to contemplate early retirement, claiming disability, self-employment, and part-time work/partial retirement, in addition to full-time re-employment. Further, these choices are mediated much more strongly by variations in individual health and –because of older workers' shorter working time horizons-- by the pace of technological change in their industry.

Existing research focusing specifically on the labour market outcomes of *older* displaced workers is just beginning worldwide, and to my knowledge has not begun in Canada. Thus, while I provide suggestions for many avenues of potentially fruitful, policy-related research in this paper, I argue that special promise and concern should be attached to older displaced workers in future research on aging and labour market flows in Canada.

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